

IN THE SPECIFICATION:

Please replace paragraph 2 at page 4 continuing onto page 5, with the following rewritten paragraph:

In order to resolve the above-mentioned technological problems, the present invention provides a hybridization detector and a sensor chip including the hybridization detector and also provides a hybridization method using the hybridization detector or the sensor chip. The hybridization detector includes a reaction region for hybridization between nucleotide probes and target nucleotide sequences having a base sequence complementary to the nucleotide probes. The reaction region has a configuration for stretching the nucleotide probes by an electric field and immobilizing the nucleotide probes attracted by dielectrophoresis on scanning electrodes arrayed in the reaction region.

Please replace paragraph 3 at page 20 continuing onto page 21, with the following rewritten paragraph:

In the detector 1a, the electrode G is a single rectangular electrode, and the electrodes C are scanning electrodes. Each of the scanning electrodes is aligned to oppose the electrode G with a predetermined distance. In the scanning electrodes C, a voltage is applied to a pair of adjacent scanning electrodes ~~D~~ C one after the other by switching on and off switches $S_1, S_2, S_3, \dots, S_x, S_y, \text{ and } S_z$ one by one. Electrical connection generates a non-uniform electric field L_2 between the scanning electrodes (for example, between G and C_x and between G and C_y). In the non-uniform electric field, electric lines of force are concentrated partially (especially in the vicinity of the ends of scanning electrodes C) as shown in Fig. 3.

Please replace paragraph 3 at page 21, with the following rewritten paragraph:

As shown in ~~Fig. 2A~~ Figs. 2A and 2B, the detectors 1a and the modified detector 1'a are disposed in a narrow gap between substrates M_1 and M_2 composed of quartz glass, silicon, or a synthetic resin such as polycarbonate or polystyrene. In the detector 1a, the depth (or width) of the reaction region R is the same as the thicknesses of the electrodes such as the counter electrodes A and B.

Please replace paragraph 2 at page 22, with the following rewritten paragraph:

As shown in Fig. 3, the nucleotide probes X, which are stretched by the uniform electric field generated between the counter electrodes A and B, migrate toward the gaps between adjacent scanning electrodes C_1 and C_2 , C_2 and C_3 , ..., C_x and C_y , ... by dielectrophoresis to be immobilized on the ends d of the electrodes ~~D~~ C and to bridge the ends d and d.

Please replace paragraph 2 at page 30, with the following rewritten paragraph:

The electrodes C_1 to C_z of the scanning electrodes C are connected to a power source V_1 by switching on the respective switches S_1 to S_z one by one. The electrodes D_1 to D_z of the scanning electrodes D are connected to a power source V_1 by switching on the respective switches s_1 to s_z one by one. Namely, when the switches S_1 and s_1 are switched on, voltages are applied between the common electrode G and the electrode C_1 and between the common electrode G and the electrode D_1 . When switches S_2 and s_2 are switched on, voltages are applied between the common electrode G and the electrode C_2 and between the common electrode G and the electrode D_2 . ~~Figs. 2A and 2B show~~ Fig. 10 shows a state in which the switches S_y and s_y are switched on and the voltages are applied between the electrodes G and C_y and between the electrodes G and D_y .

Please replace paragraph 2 at page 31, with the following rewritten paragraph:

As with the detectors 1e and 1f, the detector 1g shown in Fig. 3 11 has a common electrode G in the reaction region R, scanning electrodes D consisting of electrodes D₁, D₂, D₃, ..., Dx, Dy, ..., and Dz, and scanning electrodes F consisting of electrodes F₁, F₂, F₃, ..., Fx, Fy, ..., and Fz. The scanning electrodes D and the scanning electrodes F are aligned in two lines so that each end E of the scanning electrodes D opposes the corresponding end e of the scanning electrodes F.

Please replace paragraph 3 at page 40 continuing onto page 41, with the following rewritten paragraph:

Similarly, each end of the nucleotide probes X is immobilized on the end of the scanning electrode C₂ by switching on the switches ~~S₂ and W₁~~ S₂, W₁, and S and switching off the switches S₁ and W₂, and then the nucleotide probes X' in a stretched form are immobilized between the scanning electrodes C₂ and C₃ by switching off the switches S and W₂ and switching on the switches S₃, W₁, and W₃ to Wz.

Please replace paragraph 1 at page 41, with the following rewritten paragraph:

As described above, the nucleotide probes X' are immobilized on and bridge the ends of the adjacent scanning electrodes ~~B~~ C by sequential voltage application to the electrodes. Fig. 17 shows a state in which the nucleotide probes X' are immobilized on and bridge the adjacent scanning electrodes Cx and Cy.

Please replace paragraphs 1 and 2 at page 42, with the following rewritten paragraphs:

In order to dielectrophorese the target nucleotide sequences toward the scanning electrodes B, an electric field may be applied between the common electrode G and electrodes C, sequentially C_1 to C_z , or electric fields may be simultaneously applied between the electrode G and a plurality of electrodes C having the same potential.

Figs. 19A, 19B, and 19C illustrate typical examples of ends E of the scanning electrodes ~~C_x to C_y~~ C_1 to C_3 , which represent the above-described scanning electrodes (the same is applied to other scanning electrodes D and F). Fig. 19A illustrates scanning electrodes having a rectangular end Ea, Fig. 19B illustrates scanning electrodes having a triangular end Eb, and Fig. 19C illustrates scanning electrodes having a circular end Ec. A scanning electrode having the circular end Ec is preferable because it enhances the generation of a non-uniform electric field L_2 and the immobilization of the nucleotide probes X.